REMARKS

Entry of this Amendment under 37 CFR §1.116, and reconsideration and allowance of the above-referenced application, are respectfully requested. Claims 1-17 are unchanged and remain pending in the application.

The specification has been amended to correct a typographical error.

Claims 1 and 12 stand rejected under 35 USC §103 in view of U.S. Patent No. 5,041,798 to Moorman et al. in view of U.S. Patent No. 6,188,341 to Taniguchi et al.. This rejection is respectfully traversed. The arguments submitted August 6, 2004 are incorporated in their entirety herein by reference. The following remarks are in response to the Final Action.

The Final Action demonstrates a remarkable disregard of the claim language, plus a tortured interpretation of the applied references in an attempt to synthesize an unreasonable hypothetical combination that lacks any rational basis. In particular, the Final Action deliberately disregards the explicit claim limitations of "determining a phase error between a transmit clock and a prescribed transmit clock relative to the transmission time instant."

As described in the specification, the claimed "transmission time instant" refers to "the instant in time at which the waveform is to be output by the pulse position modulation communications system 10" (page 5, line 7). The claimed "prescribed transmit clock" (illustrated in the specification as having a normalized period of 7/60, e.g., 7 counts of a 60MHz clock) and the "transmit clock" (illustrated in the specification as a 32MHz clock) are illustrated in Figure 6.

Hence, determining the phase error *relative to the transmission time instant* enables the output of a selected waveform sample set having a corresponding phase offset that corrects for the determined phase error. Any interpretation that does not consider determining a phase error between a transmit clock and a prescribed transmit clock relative to the transmission time instant for selection of a waveform sample set that corrects for the determined phase error is unreasonable.

The Examiner ignores the broadest reasonable interpretation of the claimed "prescribed *transmit* clock" and "transmission time instant". In particular, the Examiner asserts on page 2, last 2 lines that "Moorman discloses determining a phase error between a **clock** [sic] and a **higher precision reference clock** [sic]" and that "Moorman discloses a system for steering a **clock** [sic] to a **higher precision reference clock** [sic]. The clocks are **periodically compared** to provide a phase error signal" (page 4, lines 1-3).

In fact, Moorman describes in Fig. 3 that a phase-locked feedback loop (e.g., in clock source A 40) used to synchronize the corresponding local clock signal (e.g., CLKA) to multiple clocks (e.g., local clock CLKB, remote clock CLKC', and remote CLKD') nearly every local clock cycle: the phase logic 66 of Fig. 3 compares the phase of the local clock (CLKA) with each of the other clocks CLOCK1 (e.g., CLKB), CLOCK2 (e.g., CLKC'), and CLOCK3 (e.g., CLKD') to generate respective digitized phase difference signals (see, e.g., col. 4, lines 8-13), and the respective phase differences are read every period by the microcontroller 56 in response to a corresponding PLL SYNC signal generated by the control logic 64 normally each successive falling edge of the CLKA signal (col. 4, lines 13-16 and 35-42).

Moreover, the microcontroller 56 selects the median of the three phase differences measured by the phase logic 66 to derive a digital correction signal used to create a filtered correction signal to the oscillator 60 (col. 4, lines 17-24).

Hence, there is no disclosure or suggestion of determining a phase error between a "transmit clock" and a "prescribed transmit clock" that is "relative to the transmission time instant", as claimed. Rather, the phase logic 66 of Moorman measures multiple phase differences each clock cycle, and the microcontroller 56 determines the median of the phase differences to drive the VCXO 60.

Moorman also describes that the control logic 64, in response to a TIME SYNC signal from the base microcontroller 78, asserts an MC SYNC signal that causes the microcontroller 56 to receive a steering signal from the base microcontroller 78: the steering signal is superimposed on any correction signal output by the microcontroller 56 to *steer* the oscillator 60 towards the reference frequency (see col. 4, lines 42-54).

Hence, the "steering" of the clock is not relative to *any* transmission time instant, but rather is generated periodically (every "Mus time period") by the base microcontroller. In fact, Moorman teaches at col. 5, lines 5-10 that the microcontroller 78 outputs the TIME SYNC signal every "Mus time period" which is illustrated as "every 1.048576 seconds (220 microseconds)", and that "even *random time intervals* could of course be used instead"!

Moorman also teaches that the steering signal S(n) is based on determining a timing error E(n) between counters 74 and 80 every "Mus time period" (see, e.g., col. 5, lines 12-54).

Hence, Moorman teaches phase correcting between multiple clocks CLKA, CLKB, CLKC, and CLKD every clock cycle, and steering each clock (e.g., CLKA) by a steering value based on accumulated counter values, toward a reference clock at periodic intervals that may could be either every second, or random!

Consequently, there is absolutely no disclosure or suggestion of determining the phase error between the transmit clock and a prescribed transmit clock, relative to the transmission time instant, where the waveform samples are output starting at the transmission time instant according to the transmit clock.

The unreasonableness of the Examiner's arguments become readily apparent in view of the foregoing description, especially since the Examiner asserts on page 2 that:

> The clock signal that has its frequency changed to match that of the reference clock is used to supply a suitable encoded signal [sic] for transmission over link 16 (col. 3, lines 30-33). The frequency matching is therefore related to the time of transmission of the encoded signal.

The supposed "encoding" simply refers to encoding the same clock signal (CLKA) over a duplex channel 16 between external time reference units 12 and 14, which is recovered as clock signal CLKA' (see Figs 1-3 and col. 4, lines1-6): there is no reference whatsoever that duplex channels 16 or 18 are configured for outputting anything at a "transmission time instant"; rather, only the reference clock itself is transmitted in duplex-encoded form.

The piecemeal application of Moorman is improper: the reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention

(see MPEP 2141.02 at page 2100-95 (Rev. 1, Feb. 2000) (citing W.L. Gore & Associates, Inc. v. Garlock, Inc., 22 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984))).

Finally, the attempt to qualify Moorman as analogous art is insufficient because the Final Action simply states that "Moorman discloses determining a phase error between a clock and a higher precision reference clock...." As shown above, this statement is inaccurate: the only phase comparison is between the clocks CLKA, CLKB, CLKC, and CLKD; the higher precision reference clock is used to generating a steering values based on accumulated counter values. Moreover, the Official Action fails to explain how this assertion rebuts Applicant's previous assertion:

> Moorman et al. is non-analogous art because it is not within the field of the inventor's endeavor, namely implementation of pulse position modulation communications systems, for example home networking physical layer transceivers. Rather, Moorman et al. is concerned with synchronizing clock sources between multicomputer complexes having computers that are widely separated by distances of up to several kilometers (see col. 1, lines 5-28). Further, Moorman et al. is not reasonably pertinent to the particular problem with which the inventor was involved, namely minimizing jitter in transmit waveform communications systems that that [sic] use a single transmit clock, such as a digital transmission system (see, e.g., page 2, lines 17-21 of specification). Moorman et al. provides no disclosure or suggestion of identifying a phase error between a transmit clock and a prescribed transmit clock relative to the transmission time instant, and as such is non-analogous art. In re Wood, 202 USPQ 171, 174 (CCPA 1979).

Hence, the Examiner still has failed to demonstrate how Moorman can be considered relevant prior art, since there is no identification of how Moorman is within the field of the inventor's endeavor (which the Examiner never identifies), or reasonably pertinent to the particular problem with which the inventor was involved (which apparently the Examiner ignores).

In addition, the Official Action fails to explain how Taniguchi et al. is analogous art. The Official Action simply states what Taniguchi discloses, with no explanation whatsoever of how Taniguchi is in the field of applicant's endeavor, or even reasonably pertinent to the particular problem with which the applicant was concerned.

Moreover, the Examiner makes the preposterous statement that "This prescribed data **(correction data)** is prescribed waveform sample set."

Taniguchi et al. defines the correction data ($\Delta\theta$) in equation 17 at col. 10, lines 3–44, where the correction data is implemented as a phase angle:

$$\Delta\theta = \theta - \theta',$$

where θ is defined as "real angle data θ" (col. 10, line 5) and θ' is defined as "interpolation data θ' deviated from the real value θ by $\Delta\theta$" (col. 10, lines 11-12).

Hence, Taniguchi et al. describes at column 11, line 56 to column 12, line 6 that the correction data ($\Delta\theta$), implemented as a phase angle, is stored in a correction data storage unit 4p2 corresponding to combinations of various phase errors Pd and the interpolation data (θ') (see Fig. 10 and col. 11, lines 16-22).

Hence, Taiguchi et al. neither discloses nor suggests the claimed outputting a selected waveform sample set, where the waveform sample set has samples of a prescribed waveform relative to a corresponding phase offset. Rather, Taniguchi et al. discloses a memory that stores correction data ($\Delta\theta$) that is used to correct for interpolation data (θ') in order to output interpolation data (θ) that includes no interpolation error.

Moreover, the specification consistently describes the claimed "waveform sample set" as a set of waveform samples:

> [E]ach table 16 is configured for storing equal time spaced waveform samples 30 starting with a corresponding delay time 34. For example, the pulse shape table 16_0 would store thirty-two (32) waveform samples of the waveform sample set 30a representing samples of the transmit waveform 32 with the phase/time offset 34_0, and the pulse shape table 16_9 (not shown) would store thirty-two (32) waveform samples of the waveform sample set 30b representing samples of the transmit waveform 32 with the phase/time offset 34_9. Hence, each pulse shape table 16 stores waveform samples having a normalized period spacing of 1/32.

(See, e.g., page 4, line 32 to page 5, line 4).

Any attempt to distort the claimed "waveform sample set" to read on a phase angle is inconsistent with the specification and therefore unreasonable. Hence, "claims are not to be read in a vacuum, and limitations therein are to be interpreted in light of the specification in giving them their 'broadest reasonable interpretation.'" MPEP § 2111.01 at 2100-37 (Rev. 1, Feb. 2000) (quoting In re Marosi, 218 USPQ 289, 292 (Fed. Cir. 1983)(emphasis in original)).

An evaluation of obviousness must be undertaken from the perspective of one of ordinary skill in the art addressing the same problems addressed by the applicant in arriving at the claimed invention. Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, 23 USPQ 416, 420 (Fed. Cir. 1986), cert. denied, 484 US 823 (1987). Thus, the claimed structures and methods cannot be divorced from the problems addressed by the inventor and the benefits resulting from the claimed invention. In re Newell, 13 USPQ2d 1248, 1250 (Fed. Cir. 1989).

Hence, the Official Action fails to establish a prima facie case of obviousness, since the Official Action fails to demonstate that <u>any</u> of the claim limitations are taught or suggested by the prior art. See MPEP §2143.03.

For these and other reasons, the §103 rejection of claims 1 and 12 should be withdrawn.

The indication of allowable subject matter in claims 2-11 and 13-17 is acknowledged and appreciated. It is believed these claims are allowable in view of the foregoing.

In view of the above, it is believed this application is and condition for allowance, and such a Notice is respectfully solicited.

To the extent necessary, Applicant petitions for an extension of time under 37 C.F.R. 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including any missing or insufficient fees under 37 C.F.R. 1.17(a), to Deposit Account No. 50-0687, under Order No. 95-346, and please credit any excess fees to such deposit account.

Respectfully submitted,

Manelli Denison & Selter, PLLC

Leon R. Turkevich
Registration No. 34,035

Customer No. 20736
Date: January 6, 2005